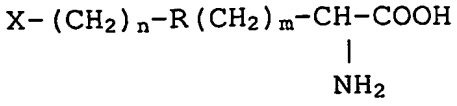
CLAIMS

I claim:

1. Halogenated amino acid analogues for use in diagnosis, which compounds have the general formula



wherein:
R is (C_1-C_6)alkyl optionally substituted with thioether or ether oxygen atom when n = 0, or a substituted aromatic or heteraromatic ring when n = 1-6; and m = 0 or 1; and
X is a halogen atom.

2. The amino acid analogues as claimed in claim 1, wherein R is methyl, ethyl, propyl, isopropyl, butyl, tertiary butyl or methyl thioethyl.

3. The amino acid analogues as claimed in claim 1, wherein R is phenyl, hydroxyphenyl, pyridyl, hydroxypyridyl.

4. The amino acid analogues as claimed in claim 1, wherein the halogen is radioactive.

5. The amino acid analogues as claimed in claim 1, wherein the radioactive halogen atom is ^{18}F.

6. The amino acid analogues as claimed in claim 1, wherein the radioactive halogen atom is ^{123}I.

7. The amino acid analogues as claimed in claim 1, wherein the halogen atom is non-radioactive.

8. The amino acid analogues as claimed in claim 1, wherein the non-radioactive halogen atom is ^{19}F.

9. The amino acid analogues as claimed in claim 1,

wherein the analogues are selected from the group consisting of [^{18}F] labelled β-2-fluoromethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-3-fluoromethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-4-fluoromethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-2-fluoroethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-3-fluoroethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-4-fluoroethylphenyl-α-aminopropionic acid, [^{18}F] labelled β-2-fluoromethylphenyl-α- aminopropionic acid, [^{18}F] labelled β-3-fluoromethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled β-4-fluoromethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled β-5-fluoromethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled β-3-fluoroethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled β-4-fluoroethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled β-5-fluoroethyl-2-pyridyl-α-aminopropionic acid, [^{18}F] labelled 2-amino-3-(5-fluoromethyl-3-hydroxyphenyl)propianoic acid, [^{18}F] labelled 2-amino-3-(6-fluoromethyl-3-hydroxyphenyl)propianoic acid, [^{18}F] labelled 2-amino-3-(2-fluoromethyl-4-hydroxyphenyl)propianoic acid, [^{18}F] labelled 2-amino-3-(2-fluoroethyl-5-hydroxypyridyl)propianoic acid, [^{18}F] labelled 2-amino-3-(3-fluoroethyl-5-hydroxy-2-pyridyl)propianoic acid, [^{18}F] labelled 2-amino-3-(5-fluoroethyl-3-hydroxyphenyl)propianoic acid, [^{18}F] labelled alanine, [^{18}F] labelled valine, [^{18}F] labelled leucine, [^{18}F] labelled isoleucine and [^{18}F] labelled methionine.

10. A pharmaceutical composition comprising one or more amino acid analogues as claimed in claim 1 and an excipient, carrier or diluent.

11. A pharmaceutical composition as claimed in claim

9 for use as a tracer in Positron Emission Tomography (PET) and functional Magnetic Resonance Imaging (MRI).

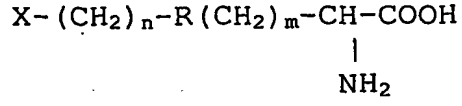
12. Use of the amino acid analogues as claimed in claim 1 in the preparation of a pharmaceutical composition for the diagnosis of cancer.

13. Use of the amino acid analogues as claimed in claim 1, wherein the diagnosis is performed by means of Positron Emission Tomography (PET) or functional Magnetic Resonance Imaging (MRI).

14. A method for diagnosing a patient for the presence of tumours and/or metastases, which comprises administration of a diagnostic effective amount of one or more of the amino acid analogues as claimed in claim 1, and visualising the localisation of the analogues in the patients body.

15. A method as claimed in claim 11, wherein the localisation in the body is performed by means of Positron Emission Tomography (PET) or functional Magnetic Resonance Imaging (MRI).

16. Precursor compounds for preparing radiolabeled amino acid analogues as claimed in claim 1, which compounds have the general formula



wherein:

R is (C_1-C_6)alkyl optionally substituted with thioether or ether oxygen atom when n = 0, or a substituted aromatic or

heteraromatic ring when n = 1-6; and m = 0 or 1; and X is a leaving group, in particular tosyl, mesityl, triflate or a halogen; and NH_2 and COOH are protected.

17. Precursor compounds as claimed in claim 16, wherein COOH is esterified with a (C_1-C_6)alkyl and NH_2 is protected with a group selected from N-Boc, N-trityl, f-moc.

18. Precursor compounds as claimed in claim 16, wherein the (C_1-C_6)alkyl is selected from the group consisting of methyl, ethyl, propyl, isopropyl, tertiary butyl and methyl thioethyl ether.

19. Precursor compounds as claimed in claim 16, wherein R is methyl, ethyl, propyl, isopropyl, butyl, tertiary butyl or methyl thioethyl ether.

20. Precursor compounds as claimed in claim 16, wherein R is phenyl, hydroxyphenyl, pyridyl, hydroxypyridyl.

21. Precursor compounds as claimed in claim 16, wherein the halogen is ^{19}F or ^{123}I.

22. A method for preparing the amino acid analogues as claimed in claim 1, comprising substitution of the leaving group with a radioactive halogen atom.

23. A method as claimed in claim 22, wherein substitution takes place by means of aliphatic nucleophilic substitution of tosyl, mesityl or triflate with a radioactive halogen, in particular radioactive fluoride.

24. A method as claimed in claim 22, wherein substitution takes place by means of exchange of the halogen leaving group with a radioactive halogen, in particular radioactive fluoride.